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A RESEARCH PROJECT FOR THE DEVELOPMENT OF A MEASURE TO ASSESS ATTITUDES REGARDING THE USES OF NEWER EDUCATIONAL MEDIA.

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THE STUDY COMPARED THE ATTITUDES OF AUDIOVISUAL PERSONNEL WITH THE ATTITUDES OF INSTRUCTIONAL PERSONNEL TOWARD THE NEWER EDUCATIONAL MEDIA. THE HYPOTHESIS OF NO DIFFERENCE WAS REJECTED AT THE ONE PERCENT LEVEL. THE INVESTIGATOR SUGGESTS THE NEED FOR PROCEDURES TO BRING ABOUT MODIFICATION OF ATTITUDE TOWARD THE NEWER EDUCATIONAL MEDIA.

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Merit for the statistical design and procedures accrues to Dr. Norris and Mr. Graybeal; full responsibility for analysis and interpretation, however, (as well as conduct of <u>all</u> phases of the project) rests upon the principal investigator.

C.P.R.

# A RESEARCH PROJECT FOR THE DEVELOPMENT OF A MEASURE TO ASSESS ATTITUDES REGARDING THE USE OF NEWER EDUCATIONAL MEDIA

PROBLEM Educators responsible for the inservice development of teachers often find that some teachers are reluctant to accept advocated "newer ways" of instruction. When these new ways involve utilization of the newer educational media, reluctance may be caused by many factors, i.e., fear of an unknown procedure, threat to established ways of teaching, uncertainty about the uses of strange machinery and materials, doubts about the supposed advantages of the newer media, or incompatibility with the teacher's philosophy of education. Since these forms of reluctance or resistance may be very subtle, supervisory personnel have few techniques for assessing the degree and amount of unfavorable or sympathetic attitudes toward curriculum change in general, or toward the utilization of new educational media for instructional purposes in particular.

Kelley (1960) has shown that a very high significant relationship exists between "teachers' attitudes toward audio-visual materials and whether or not they have had the encouragement of the various supervisors in the school system." His research, however, reveals opinions of teachers as related to many other biographical factors only, and does not produce valid measures of audio-visual attitude, per se.

## Attitude Structure

Such examples of personal reluctance are a part of attitude structure. Although it is almost impossible to establish a direct relationship between what one says one believes and observable behavior, most of the research related to attitude development and attitude expression actually relates to attitudes as measured by some sort of verbal, or expressed opinion, type

measuring device. While Rokeach (1960) seems to suggest that attitude and behavior are part of a consistent psychological system with the individual, other authors (more directly involved with attitude research), such as Thurstone (1928), Likert (1932), and Guttman (1941, 1944, 1947), describe attitude measurement as an attribute of behavioral predisposition, but do not make claims that the measurement of expression in specifics can be broadened to a general description of personality. A fruitful area of research would be to attempt to correlate attitude assessment findings with critical incidents or behavioral phenomena, but no such evidence has been produced as yet.

## Research Needed

It is seldom possible for an instructional supervisor or curriculum consultant to know the exact nature of resistance to the use of new educational media by teachers in the instructional program. Such knowledge is necessary for adequate inservice development of teachers. It was the purpose of this project to devise an instrument to measure attitudes toward the uses of new educational media for instructional purposes.

## Basic Hypothesis

It was a basic hypothesis of this study that there would be significant differences in expression of sympathy with, or hostility toward, the uses of newer educational media for instructional purposes by two different categories of personnel. For purposes of statistical design, the null hypothesis form was utilized. The two categories of personnel included:

1. Those persons who by self-designation indicated themselves to be workers in the audio-visual field, and who had affiliated with a national professional association for the advancement of audio-visual concepts in education
2. Those persons primarily in the teaching profession as full-time

teachers, principals, supervisors, and other curriculum workers who had identified themselves professionally with an association devoted to supervision and curriculum development problems.

It was not a necessary contingent of the hypothesis that those persons in audio-visual education, or members of such an association, would (necessarily) rank high in sympathy toward new media; nor, was it assumed that those who identified themselves as curriculum workers were necessarily opposed to the use of newer media for instruction. In essence, it was assumed that there would be significant differences between those broadly identified as curriculum workers and those broadly identified as audio-visual workers. However, within each broad organizational classification, similar positions of employment for members of the two associations were found.

Hypothesis: Curriculum and supervisory personnel, and audio-visual workers have significantly different mean scores on a measurement of attitude toward the uses of newer educational media.

RESEARCH PROCEDURES

Two professional departments of the National Education Association were selected--the Department of Audiovisual Instruction and the Association for Supervision and Curriculum Development. The comprehensive membership mailing tapes of the two organizations were secured, and each individual mailing label was numbered. (The tapes were organized for mailing by geographic regions of residence of the members.)

Sample Selection

After the individual mailing addresses were numbered, a table of random numbers was used to draw the actual research sample. Following standard techniques, numbers were drawn from the table corresponding to the number of digits (the last four) in the membership enumeration. Approximately 10 per cent of the membership labels in each organization were drawn for the

treatment. This procedure produced 678 addresses from the A.S.C.D. membership and 440 addresses from the D.A.V.I. membership.

The questionnaire, "Controversy in Academicia" (See Appendix B), was sent to each addressee with a cover letter encouraging cooperation from the appropriate executive secretary. A stamped self-addressed return envelope was included.

Response and Nonresponse

Three questionnaires addressed to A.S.C.D. members were returned as undeliverable. It was assumed, therefore, that 675 questionnaires were received. Of this number 441 usable questionnaires were returned by A.S.C.D. members--a 65.3 per cent return. Of the 440 questionnaires sent to members of the D.A.V.I. group, 8 were returned as being undeliverable, leaving 432 assumed received. Of this number, 267 usable questionnaires were returned--an approximate 61.8 per cent response to the questionnaire mailing.

Follow up. After a 30-day period a second mailing was sent to all those in each group who had not responded to the first mailing. The second request produced several additional responses. (The totals include all responses.) No completed questionnaires were received and accepted for tabulation beyond the 30-day period following the second mailing. Thirty days following the second mailing coincided closely with the termination of school activities in many portions of the country. It was assumed, therefore, that if the teachers had not received their mail by that time or had not answered the questionnaire, they probably would not do so during the intervening summer months. This supposition seemed substantially correct, since only three questionnaires were returned during the summer period when tabulation and data processing were under way.

Nonresponse. An analysis of nonresponses indicated that heavy percentages of the nonresponse in both organizations could be accounted for by

the fact that the membership mailing tapes of the two organizations were used. The addressees in many cases on the membership tapes were not specifically the names of individuals, but rather were organizational addresses of persons indicated by title but not by name. It was assumed that many of the addressees not personally identified may not have felt the encouragement necessary to respond to the questionnaire.

Classification

Respondents were asked to indicate, at the top of the questionnaire, their job designation or position. As these were tabulated, it seemed that approximately ten categories within each organization would suffice to cover the main positions. These categories were:

1. Classroom teacher
2. Public school administrator-principal, supervisor, or curriculum director
3. College teacher, education or teacher education
4. College teacher, audio-visual or related fields
5. Audio-visual coordinator for school building, part-time AV
6. Audio-visual coordinator or director of audio-visual services
7. Audio-visual equipment producer, manufacturer, or salesman
8. Audio-visual consultant or coordinator, independent of schools
9. Miscellaneous category
10. State department of education personnel, federal government personnel involved in audio-visual work or curriculum coordination work.

These categories held for both organizations. The tabulations, however, revealed that certain categories either possessed too few persons to be significant, or else the organization of the category itself was too heterogeneous for significance. Category "9" was one such group. Miscellaneous people grouped into this category were not homogeneous and, consequently, did not belong in any of the other organizational patterns. Table I shows the

composition of respondents by membership in their associations and by job classification categories.

TABLE I

COMPOSITION OF QUESTIONNAIRE RESPONDENTS, BY ASSOCIATION MEMBERSHIP AND BY JOB CLASSIFICATION CATEGORIES

| Organization | Category 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A.S.C.D. | 38 | 287 | 57 | 5 | 0 | 1 | 0 | 0 | 37 | 16 | 441 |
| D.A.V.I. | 31 | 38 | 17 | 27 | 32 | 57 | 18 | 13 | 25 | 9 | 267 |
| Totals | 69 | 325 | 74 | 32 | 32 | 58 | 18 | 13 | 62 | 26 | 708 |

Categories:

1. Classroom teacher
2. Public school administrator-principal, supervisor, curriculum coordinator
3. College teacher--Educ. or Tchr. Educ.
4. College teacher--A-V or related
5. A-V coordinator for building--(part-time A-V)
6. A-V coordinator as director for system--(full-time A-V)
7. A-V equipment producer/manufacturer/sales representative
8. A-V consultant/coordinator--independent of schools
9. Miscellaneous occupations
10. State and federal educational agency personnel

QUESTIONNAIRE CONSTRUCTION

A survey was made of the general literature extant in audio-visual education. This material contained published articles in general periodicals, research journals, textbooks, and the like, and quotations from speeches of authors and spokesmen generally advocating the uses of new media in the teaching-learning process. Additional statements were taken from similar sources representing reluctant or opposition opinions regarding the use of newer media in instruction.

Statements from this literature were used as the raw items for building the questionnaire. An experimental questionnaire of approximately eighteen items was developed for a series of leadership conferences to explore ways

and means of disseminating information concerning the newer educational media. From the experimental questionnaire, RLPC #2-5/6, (See Appendix A) certain findings were made.

A general tendency was noted for audio-visual workers and curriculum workers to respond differently and in a dichotomous manner from each other to these raw trial items. The questionnaire (RLPC #2-5/6) served as the research vehicle base for later questionnaire development and item construction. The number of items in RLPC #2-5/6 was found to be too small for adequate attitude measurements. As a result, a more comprehensive and exhaustive survey of the literature (1950-1960) was conducted to seek out and isolate specific examples of statements regarding sympathy with or hostility toward the newer educational media for instructional purposes. From a collection of approximately 375 items a refined list of 78 items was included in the final research questionnaire, NMAS-II. NMAS-II was the research vehicle utilized in the presently reported study. (See Appendix B.)

Item Development

Items for NMAS-II were written in conformity with the general criteria suggested by Wang (1932) for the construction of attitude statements. The original research hypothesis, i.e., that the individuals responding to these items could be dichotomized into those sympathetic with or hostile toward the newer educational media, and could be identified, is consistent with the bimodal attitude construct suggested by Stogdill (1936). Instead of using the seven-point scales of Stogdill, the five-point scale of the Likert-type was utilized. The zero-point of this five-point scale was taken as the score of minimum attitude intensity; that is, indifference, neutrality, or noninformation. Neutrality was considered to be the third-point in the five-point scale. This method is consistent with the unidimensional concept reported by Green (1954).

STATISTICAL PROCEDURES

Some important deviations from the earlier advocated method of attitude measurement construction were utilized. These deviations may be identified as follows: (1) The items are nonrecurring; that is, Thurstone's procedure requiring dual endorsement and repetition of the item was not followed. (2) The general procedure of rank order scaling, as originally developed by Thurstone (1929) and followed by Guttman (1947) and others, was not followed here.

The preponderance of early research and theoretical writing in attitude assessment indicates that attitudes are additive components and that a scale procedure may be developed to measure attitudes. More recently, however, there has developed a large body of thought expressing the view that attitudes in such specifics as new media (for instance) may not be a part of psychological personality totality, and that a continuum of attitude may not exist. Kelley (1959) constructed a measurement device based upon the additive concepts of Thurstone, with equal appearing intervals and a continuum process for attitude measurement. Unfortunately, this procedure did not assess attitude as such, but rather was used only for correlations of the scores on this measure with other biographical characteristics. The presently reported research, therefore, also departs from the early attitude structure devices of the 1930's, as did Likert, Stogdill, and others.

Attitude Distribution

No clear-cut evidence exists to indicate that a continuum of attitude regarding uses of audio-visual media has been discovered. The continuum concept as proposed by Thurstone (1929), and followed by Guttman (1941, 1944, 1947), and Remmers and Silance (1934), has, more recently, been challenged by Likert (1932, 1942) and Campbell (1950). Green (1954) suggests that an attitude universe is a more appropriate construct than the earlier continuum proposition. The presently reported research effort, therefore, is not an

attitude scale with equal appearing interval units, nor do the items follow from a positive to a negative tendency, such as Kelley's (1960) scale. Rather, positive and negative items appear with almost equal frequency, their order determined randomly. Such an arrangement prevents the establishment of a psychological attitude "set," and requires the respondent to determine his direction of response anew with the appearance of each new item.

Scale terminology. Whether the instrument should be called a "scale" is a difficult question to answer. In the statistical sense of Thurstone, NMAS-II cannot be considered an attitude scale. Terminology may be somewhat confused, however. Green (1954, p. 338) suggests, in a comprehensive review of the entire literature of attitude measurement, that "any collection of the items will be called a questionnaire. Other terms, such as tests, inventory, and scale, have been used in the literature."

There are as many statistical procedures for the treatment of attitude measurement data as there are major research contributors (Green, 1954). Thurstone not only spawned a new science, but also produced a prolific crew of disciples. Likert's work produced the first major statistical deviation from this trend. The present study leans heavily upon statistical procedures adapted from the works of Likert and Lindquist (1951). In his critique of scaling methods and statistical procedures, Green (1954, p. 365) reports that "currently, an investigator who must choose one of the methods can find little information on which to base his choice."

In the present study the research vehicle is actually a questionnaire possessing the scaling procedure of the Likert-type arrangement. The respondent was asked to indicate the degree of agreement with each statement in the questionnaire as follows: (1) very strong disagreement; (2) moderate disagreement; (3) neither agree nor disagree (neutral or indifferent;

(4) moderate agreement; (5) very strong agreement.

Items in NMAS-II, therefore, were accepted or rejected for inclusion in the final attitude measurement device based, not upon reliable consistency of an individual's responses to all items, but rather upon an analysis of variance of scores on each individual item by employment categories within each of the two organizations, the mean scores for an item total by organizations, and a comparison of grand means between major groups.

## Statistical Design

The procedures used to provide statistical accuracy in this research project were kept simple. The basic design involved the uses of an analysis of variance along three dimensions. Since the basic purpose of this project was to select specific items from the questionnaire NMAS-II, the research follows responses to items rather than responses of individuals to the entire pool of items. The whole research, therefore, centers upon item analysis.

The research design utilized a simple randomized analysis of variance along three dimensions: (1) among categories within the audio-visual organization; (2) among categories within the curriculum organization; and (3) between the audio-visual groups and the curriculum groups on each item. These three dimensions existed independently of each other. The investigators anticipated that such a design would identify test items which would: (1) distinguish A-V groups, one from the other; (2) distinguish curriculum groups, one from the other; and (3) distinguish A-V groups from curriculum groups.

There were ten occupational categories within each organization, and the assumption was made that the members in groups within organizations were comparable in attitude structure. This occupational information came from the original job designation which each respondent placed upon his

questionnaire. The ten categories were established on the basis of the questionnaire returns from the audio-visual organization membership, since the membership in that organization was more inclusive. Comparable categories were established for the curriculum organization membership. Table I shows that there were no respondents in categories "5," "7," and "8" for the sample of A.S.C.D. members.

One interesting side-question of the research was whether a person in the audio-visual organization who identifies himself as an elementary school principal, for instance, is basically of the same mind as a person in the curriculum organization who also categorizes himself as an elementary school principal. It was possible to make direct comparisons between the mean scores per item in category "2" within A-V as compared with the mean scores of category "2" in curriculum.

The mean square ratio between groups has an F distribution. Therefore, an F ratio was developed for groups within each occupational category and between the two broad organizational categories. Appropriate tests of significance (at the $F_{.99}$ level) were made, and it was determined whether an individual item had the significant variance along any one of the three dimensions mentioned above. Responses on some items contributed to "significant" mean square ratio (variance) along one dimension, along two dimensions, or in all three dimensions. Only one item, No. 60, had a significant mean square ratio (variance) in all three dimensions. Thirty-nine items showed significant distinction between mean scores of A.S.C.D. members and the D.A.V.I. members. Eleven items showed significant mean square ratios within the A.S.C.D. group, and ten items showed significant mean square ratios within the categories within the D.A.V.I. organization. Responses on thirty-one items in the NMAS-II sampling were not greater than chance fluctuation and these items were rejected for inclusion in the final measurement device.

Research Model

In the three-dimensional model, the items were selected when the F ratio $\frac{s^2_b}{s^2_w}$ was greater than chance probability on any one of the three dimensions. The level of significance chosen was .01.

Figure 1 provides graphic illustration of the three-dimensional model. The tabulation at the bottom of Table I (page 6) indicates the amount of variance discovered by occupational category, when a high mean square ratio in the category on an individual item was regarded as significant. Most of the variance existed in categories "2" and "3" and also a high degree of variability was noted in category "9."

FINDINGS OF THE STUDY

The research provided an instrument useful in discriminating between individuals possessing attitudes hostile to or in sympathy with the uses of newer educational media for instructional purposes.

Device for Discrimination

In terms of the first two objectives, the presently reported research was substantially successful. The analysis of variance of questionnaire responses of individuals in two organizations to the 78 items in NMAS-II provided some distinctive measure of attitude differences between mean scores of the two groups. This difference was statistically significant at the .01 level. Therefore, the original research hypothesis was accepted that significant differences in attitude would exist between the average membership of the two organizations sampled.

Distinguishing items. Thirty-nine items showed significant distinction between the responses of A.S.C.D. members and D.A.V.I. members. Eleven items showed significant variance within the responses in the D.A.V.I. organization. Thirty-one items in the NMAS-II sampling showed no discrimination and were rejected for inclusion in the final measurement device.

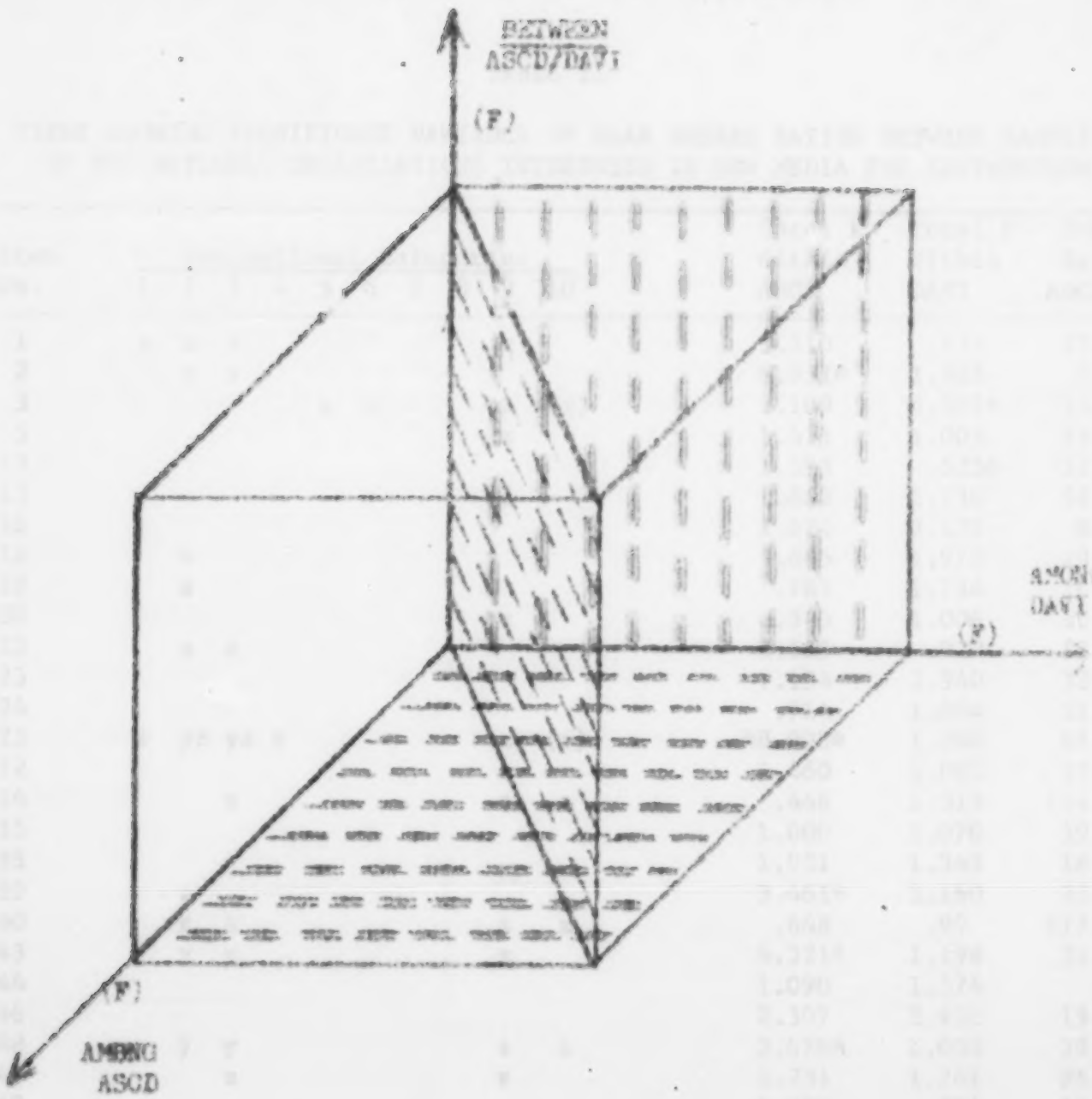


FIGURE 1

RESEARCH MODEL OF DIMENSIONS
OF SIGNIFICANT VARIANCE

Table II shows by item number and by occupational category the 39 items with statistically significant different means scores between the total groups in A.S.C.D. and D.A.V.I. These 39 items then comprise the final new media attitude measurement device. (See Appendix C.)

TABLE II

ITEMS SHOWING SIGNIFICANT VARIANCE OF MEAN SQUARE RATIOS BETWEEN SAMPLINGS OF TWO NATIONAL ORGANIZATIONS INTERESTED IN NEW MEDIA FOR INSTRUCTION

| Item No. | Occupational Categories 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total F Within ASCD | Total F Within DAVI | Total Between ASCD/DAVI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | x | x | x | | | | | | x | | 1.310 | .731 | 27.980* |
| 2 | | y | y | | | | | | | | 6.931* | 1.905 | 8.480* |
| 3 | | | | | x | x | | | x | (x) | 2.109 | 4.201* | 14.942* |
| 5 | | | | | | | | | z | | 1.411 | 1.005 | 23.583* |
| 13 | | | | | | | | | | | 1.393 | .3258 | 31.620* |
| 15 | | | | | | z | | | z | | 1.862 | 1.730 | 58.102* |
| 16 | | | | | | | | | | | 1.674 | 2.129 | 8.551* |
| 18 | | z | | | | | | | | | .645 | 1.978 | 19.918* |
| 19 | | z | | | | | | | | | .781 | 1.734 | 16.013* |
| 20 | | | | | | | | | z | | .843 | 1.006 | 10.588* |
| 22 | | z | z | | | | | | | | 1.226 | .920 | 57.867* |
| 23 | | | | | | | | | | | 1.134 | 2.940 | 32.434* |
| 24 | | | | | | | | | | | .764 | 1.044 | 21.871* |
| 25 | z | yz | yz | z | | | | | z | (z) | 48.998* | 1.200 | 61.581* |
| 32 | | | | | | | | | z | | 1.460 | 1.065 | 37.752* |
| 34 | | | z | | | | | | z | z | .446 | 1.515 | 114.301* |
| 35 | | | | | | | | | | | 1.000 | 1.070 | 39.033* |
| 38 | | | | | | | | | | | 1.951 | 1.343 | 18.507* |
| 39 | | z | | | | | | | | | 3.461* | 2.160 | 33.865* |
| 40 | | z | z | | | | | | z | z | .648 | .99 | 117.753* |
| 43 | | y | y | | | | | | z | | 4.321* | 1.198 | 21.444* |
| 44 | | | | | | | | | | | 1.090 | 1.374 | .006* |
| 46 | | | | | | | | | | | 2.307 | 2.931 | 13.200* |
| 48 | | y | y | | | | | | z | z | 3.676* | 1.055 | 39.959* |
| 49 | | | z | | | | | | z | | 1.231 | 1.741 | 95.614* |
| 50 | | | | | | | | | | | 1.937 | .796 | 16.531* |
| 51 | | | | | | | | | | | 1.050 | 2.031 | 24.853* |
| 53 | | | | | | z | | | | z | 1.714 | .293 | 52.592* |
| 54 | | | | | | | | | | | 1.593 | .919 | 64.875* |
| 56 | | x | x | | | x | x | (x) | | x | .952 | 4.518* | 37.747* |
| 60 | | y | y | | | | | | | | 4.803* | 4.587* | 8.613* |
| 61 | z | z | z | | | | | | z | | .878 | .746 | 57.854* |
| 63 | | z | z | z | | | | | | z | 3.701 | .977 | 10.729* |
| 64 | | | | | | | | | | | .585 | 1.327 | 37.234* |
| 68 | | | | | | | | | | | .309 | 1.719 | 16.993* |
| 69 | | | | | | | | | | | .613 | 1.196 | 15.458* |
| 70 | | | | | | | | | | | 1.153 | .786 | 16.820* |

TABLE II (Continued)

| Item No. | Occupational Categories 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total F Within ASCD | Total F Within DAVI | Total Between ASCD/DAVI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72 | | | | | x | | | (x) | x | x | 1.197 | 2.921* | 32.331* |
| 75 | | | xz | | | x | | | | | .961 | 6.421* | 36.431* |
| Totals | 1x | 2x 7y 2z | 4x 7y 9z | 1x 2z | 3x | 4x 2z | 3x | 4x 11z | 6x | 5x 1y 6z | | | |

Legend: x--Significant ratio within D.A.V.I. category
y--Significant ratio within A.S.C.D. category
z--Significant total F, grand mean for both groups, within category, between groups
( )--Category at variance with most other categories
*--Ratio, sum of squares, significant at .01 level of significance

Table III lists those items for which there was total F ratio variance significantly high within A.S.C.D. The major variance in this organization exists between categories "2" and "3"; i.e., between, on the one hand, principals, supervisors, curriculum coordinators, and other public school administrators as compared with, on the other hand, college teachers in education.

TABLE III

ITEMS SHOWING SIGNIFICANT VARIANCE OF MEAN SQUARE RATIOS BETWEEN CATEGORIES, WITHIN A.S.C.D.

| Item No. | Occupational Categories 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total F Ratio Within ASCD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | # | | # | # | | | |
| 2 | | y | y | | | | | | | | 6.931* |
| 25 | | y | y | | | | | | | | 48.998* |
| 26 | | y | y | | | | | | | | 5.311* |
| 28 | | | | | | | | | | | 4.528* |
| 48 | | y | y | | | | | | | | 3.676* |
| 60 | | y | y | | | | | | | | 4.803* |
| 62 | | | | | | | | | | | 3.854* |
| 63 | | | | | | | | | | | 3.701* |
| 78 | | y | y | | | | | | | | 4.190* |

Legend: y--Significant variance between mean of category and mean of group
*--Significant F ratio at .01 level of significance
#--No respondents in this category

Table I (page 6) shows that categories "5," "7," and "8" contained no respondents in the A.S.C.D. sampling, and that responses in these same categories were not large in the D.A.V.I. membership sampling. In fact, since categories "5," "7," and "8" contained no respondents in the A.S.C.D. sampling, these categories have no significance for comparison with D.A.V.I. respondents in reading Table III.

Table IV indicates by item number and by occupational categories those items for which there was significant variance within categories in D.A.V.I. Significant variance is widespread throughout the occupational categories, but categories "8," "9," and "10" are those most often at variance with the other categories. These last three categories were the ones most difficult to identify in terms of occupational grouping. For purposes of coding, category "8" contained A-V consultants and coordinators who were independent of school operational management. Category "9" was a miscellaneous category into which numerous occupational classifications fell. Category "10" contained state department of education and federal government personnel who were members of D.A.V.I.

TABLE IV

ITEMS SHOWING SIGNIFICANT VARIANCE OF MEAN SQUARE RATIOS BETWEEN CATEGORIES, WITHIN D.A.V.I.

| Item No. | Occupational Categories | | | | | | | | | | Total F Ratio Within DAVI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 3 | | | | | x | x | | | x | (x) | 4.201* |
| 8 | x | | x | x | x | x | x | (x) | x | x | 2.646* |
| 23 | | | | | | | | | | | 2.940* |
| 29 | | | | | | x | | | x | | 2.597* |
| 56 | | x | x | | | | x | x | (x) | x | 4.518* |
| 59 | x | | | | | | | x | | | 2.511* |
| 60 | | | | | | | | | | | 4.587* |
| 67 | x | | | | | | x | | | | 2.667* |
| 72 | | | | | x | | | (x) | x | x | 2.921* |
| 75 | | | x | | | x | | | | | 6.421* |
| Totals | 3 | 1 | 3 | 1 | 3 | 4 | 3 | 4 | 5 | 4 | |

Legend: x--Significant variance between mean of category and mean of group
(x)--Category at variance with most other categories noted
*--Significant F ratio at .01 level of significance

Heterogeneity

A comparison of the occupational categories having significant variance in tables II and III indicates a very substantial finding of the study. The significant variance between categories in A.S.C.D. existed between the occupational category comprising elementary school principals, supervisors, and curriculum coordinators, on the one hand, and college teachers in education in category "3" on the other hand. This difference is clearly shown in Table III. An analysis of Table IV, however, indicates wide variance between categories throughout the range of occupations with significant variance existing on many items within the D.A.V.I. group in the occupational categories--"6," "8," "9," and "10." Previously it has been noted that category "9" is not considered to be a homogeneous group, and that extreme fluctuation would be expected within the responses of this category.

The results shown in tables III and IV have an additional meaning. One interpretation might be that those indicating membership in A.S.C.D. possess--across the boards--more homogeneous attitudes and points of view while D.A.V.I. members are very different in occupations, attitudes, and professional viewpoints. It would appear that D.A.V.I. is a much more heterogeneous organization than is A.S.C.D.

Random inspection of the membership roles of the two organizations also indicates this extreme difference in composition of the memberships of the two groups. However, it should be noted that there is an area of overlap between memberships; that is, some persons hold memberships in both organizations. No such individual, however, was included in the sampling procedures. Such a person was not deliberately excluded from this research design, but the random sampling procedure did not produce any such individual.

Attitude Complexity

The early sections of this report indicate the voluminous literature which exists in the field of attitude measurement. The works of Wang and Thurstone are sufficiently comprehensive as a guide for any research worker in the development of attitude statements. However, in the very restricted field of audio-visual education (and in the measurement of attitudes toward the use of audio-visual materials), an interesting phenomenon takes place. Attitude statements may be of three sorts: (1) An item which is pure advocacy--suggesting a point of view or a way of doing a certain procedure; (2) an item of belief about which one may either express a favorable or unfavorable attitude; and (3) a statement which contains elements of fact to be accepted or rejected. All three types of items were included in MMAS-II.

The first and second kinds of items were more easily responded to by the participants in the present study. The third type of item involves an unusual and interesting reaction: those persons with the most information about a particular item exhibited greater variability of response and attitude than did those with more restricted information. A comparison of Table II and Table III (pages 14 and 15) shows this clearly--that there was a great deal more variability among the scores of the occupational categories in D.A.V.I. than in A.S.C.D. One might assume that the many technical specialists from various manufacturing interests (as well as educational application interests) in D.A.V.I. would possess detailed knowledge about new media, and that this detailed knowledge would provide more homogeneous attitude responses. Such a finding did not obtain. The casual reader might almost suspect that the more information a group possesses in regard to a particular topic in the attitude measure, the more variable would be the attitude responses to this item.

PROCEDURES FOR SCORING

It will be remembered that the purpose of the research project was to develop a measure of attitude based upon item analysis. All of the statistical analysis was provided vertically--in terms of item response within occupational categories in the two major organizations sampled. No analysis was done in terms of any one individual's responses and no normative data were obtained in terms of individuals. It is difficult, therefore, within the bounds of the limited proposed research to provide standardizing procedures for scoring based on the rationale of research design.

An over-all mean score of 3.17 for all respondents to all items on NMAS-II was computed. A standard deviation of 1.43 was obtained. It may be assumed, as in all normal curves of distribution, that 68 per cent of the respondents existed within one standard deviation from the mean. Significant deviation from the mean score on all items on NMAS-II by individuals would be placed at one standard deviation. Other researchers who wish to utilize the instrument might, therefore, place their limits for normality at one standard deviation and any respondent would be considered extreme who received a score per item averaging less than, or more than, one standard deviation from the mean derived on the sample population.

Educators responsible for the inservice development of teachers and others, where the problem of assessment of attitude toward new media is necessary, might use "Controversy in Academicia" for identification of members of the teaching staff with antagonistic, hostile, or indifferent attitudes toward the uses of newer media. Such identification would allow the educators responsible for inservice development to focus their attention and developmental processes on those individuals.

IMPLICATIONS FOR FURTHER RESEARCH

Some fruitful opportunity for deeper consideration is presented in Table III, (page 15). While not within the purview of this research report, it would be interesting to analyze why those persons in category "2" differed significantly in their attitude statements from those persons presumably the most responsible for the teacher education and preparation of the members of category "2." Within the present research design, there was no way to tell who was "right" or who was "wrong," so there is no way to know whether the college faculty members in category "3" or the category "2" personnel (within A.S.C.D.) are most sympathetic towards the use of newer media for instructional purposes.

Any verbal attitude measurement device simply assesses attributes of personal behavior predisposition (but do not presume to measure specific behavior). Another fruitful area of research would be to attempt to correlate attitude assessment findings with some sort of critical incidents or with behavioral phenomena regarding the uses of newer educational media.

A separate research project might utilize the same data cards to analyze individual responses to items and develop standardized scoring procedures which might be more reliable than the standard deviation technique reported here. In attitude assessment regarding newer educational media, as in the entire field of attitude measurement, the surface has barely been tapped in the research efforts to date.

Finally, little has been done to determine levels of attitude and then institute research procedures for the <u>modifications</u> of attitude toward newer educational media. This last implication of research might perhaps be one of the most fruitful areas of all for further research efforts in the field of new media implementation.

## APPENDIX A

## "Controversy in Academicia"

## RLPC #2-5/6

CONTROVERSY IN ACADEMICIA RLPC#2-5/6

#_____

This instrument is designed to elicit information about the nature of the participants of the conference. The following statements represent varying points-of-view about which there is some controversy in American education today. PLEASE ASSUME NO POSE, but respond rapidly according to your degree of agreement with the statements listed below. Mark your answers in the blank spaces before each sentence according to the following code:

1. VERY STRONG DISAGREEMENT
2. MODERATE DISAGREEMENT
3. NEITHER AGREE NOR DISAGREE--NEUTRAL
4. MODERATE AGREEMENT
5. VERY STRONG AGREEMENT

62.____The number of teaching-learning aids has greatly increased lately.

63.____I feel that most new educational media are too complicated for me to use in my work.

64.____The percentage of teachers using such aids has increased greatly in recent years.

65.____There really isn't an educational frontier in new educational media--just new gadgets.

66.____The personal relationship between teacher and pupil is essential most of the time, in most learning situations.

67.____Most of the innovations in educational media have been well validated in research studies to substantiate their utility.

68.____Learning through audio-visual educational media almost always is a passive experience.

69.____My status on the job is directly related (Positive) to my specialized knowledge about my area, and its materials.

70.____Audio-visual materials and media should be the province of certain AV specialists.

71.____The creative child is apt to be stifled by the expanded use of audio-visual instructional media.

72.____Educational television is of little real value.

73.____Vicarious learning experiences, through AV media, should be a major element in all classroom learning experiences.

74.____Most audio-visual materials are so specific as to have little adaptability to different teaching requirements.

75.____The greatest adaptability needed is in the personality and method of teachers--not audio-visual media.

76.____The expense of most audio-visual media is out of all proportion to their educational value.

77.___The educational value of broadcast television for children is almost uniformly negative.

78.___Wider use of the newer educational media will ultimately mean that instructional costs can be reduced.

79.___There is little need to consult with teachers on utilization of newer educational media, since most of the decisions are administrative.

## APPENDIX B

## "Controversy in Academicia"

## NMAS-II

Name the specific professional position you hold, and its level_____

_____

The following statements represent varying points of view about which there is some controversy in American education today. PLEASE assume no pose, but respond rapidly according to your degree of agreement with the statements listed below. Mark your answers in the blank space before each sentence according to the following code:

1. VERY STRONG DISAGREEMENT
2. MODERATE DISAGREEMENT
3. NEUTRAL--NEITHER AGREE NOR DISAGREE
4. MODERATE AGREEMENT
5. VERY STRONG AGREEMENT

____01. The widespread use of teaching machines will revolutionize the process of instruction as we know it now.

____02. All teachers in training should take a course in the use of A-V aids.

____03. Every school should have a central A-V room where the equipment is permanently installed and available for use there.

____04. Most students have the attitude that newer educational media are for entertainment.

____05. Learning through A-V educational media is a passive experience.

____06. School administrators have gone "gadget happy" on A-V equipment.

____07. The number of teaching-learning aids has greatly increased lately.

____08. The increasing use of newer educational media is a part of the present international trend toward greater dependence upon mechanization, technology, and science.

____09. The success or failure of educational television depends largely upon the quality of programs produced.

____10. Many teachers hesitate to use A-V aids because they lack the mechanical skills necessary to operate the equipment.

____11. The increasing usage of A-V aids is a cause of the greater conformity among students.

____12. The electronic language laboratory is only a fad.

____13. The possible uses of A-V equipment are limited only by the imagination of the person directing the usage.

____14. Equipment such as radios, record players, and tape recorders which stimulates solely by auditory means is becoming obsolete.

____15. Wider acceptance of currently known A-V aids is needed.

____16. Programs for teaching machines should be developed by A-V specialists.

____17. Most schools have teachers on their staffs who would be interested in using newer media if more proper leadership could be obtained.

____18. Proper use of A-V materials can go a long way toward providing for individual differences in the learning needs of children.

____19. Most professional educators have viewed newer educational media in the specific context of machines and operations rather than in the more general point of view of a medium for communication.

____20. There are no educational frontiers in newer educational media--just new gadgets.

____21. If a person can see, hear, and evaluate his own performance, he will benefit more from the basic learning experience.

____22. Public relations are a primary responsibility of A-V people.

____23. The development of new A-V aids is a waste of time and resources.

____24. Recent technological trends in education demand a changing teacher role.

____25. Only through A-V media can vicarious learning experiences be provided in the classroom.

____26. There is no need to provide separate courses in A-V usage in teacher education programs.

____27. Teaching machines are untried and unproven fads.

____28. The video tape recorder can be of inestimable value in teacher training.

____29. Audio-visualists envision A-V aids as a panacea for all the ills besetting education.

____30. A-V educational media can be more extensively used in the elementary grades than in the higher grades.

____31. School administrators should analyze the usage of their present A-V equipment.

____32. The teaching of foreign languages in the elementary school lends itself particularly well to the use of A-V aids.

____33. In a broad sense, everything the teacher does that stimulates the student is teaching by audio-visual methods.

____34. A-V materials and educational media usage should be the province of A-V specialists.

____35. The creative student is apt to be stifled by the extensive use of A-V instructional media.

____36. Educational television is of little real educational value.

____37. Greater continuity is needed in the development and preparation of such A-V aids as films and filmstrips.

____38. The vicariousness of learning by A-V aids is not conducive to the most effective learning.

____39. A basic problem of A-V education is to change the attitude of many teachers who look upon A-V aids simply as frills tacked on to their regular teaching.

____40. One of the most satisfactory ways to provide adequate educational opportunities for the increasing mass of students is through wider usage of A-V aids.

____41. The greatest adaptability needed is in the personality and method of teachers--not A-V media.

____42. One of the major advantages of teaching machines is rapid acquisition by students of rote material.

____43. Provision for the purchase of A-V equipment should be included in every school's instructional budget.

____44. The educational value of broadcast (commercial) television is practically nil.

____45. The possible educational uses of A-V equipment are limited by the understanding of the teachers using the equipment.

____46. The development of A-V centers in every school unit should be encouraged and facilitated.

____47. The below-average student is usually stimulated more by the use of newer educational media than the above-average student.

____48. In one teacher's college, 10 per cent of the instructional budget is given to the A-V department. More colleges should adopt this plan.

____49. Exerting influence for administrative decisions favorable to A-V should be a key activity of A-V personnel.

____50. The use of such aids as the bioscope, electric microscope, and science films can revolutionize the teaching of science.

____51. The expense of most A-V media is out of all proportion to their educational value.

____52. More information and research in the use of teaching machines is necessary before introduction into regular classrooms.

____53. New teachers would be more inclined to use A-V aids if there were wider usage of these aids in teacher-training programs.

____54. Most innovations in newer educational media have been well validated in research studies to substantiate their utility.

____55. At present many A-V aids are being used simply to fill time, to give the teacher some relief time, or as entertainment.

____56. Most A-V persons do not use the mass communications media enough in developing a favorable public attitude toward A-V.

____57. Language laboratory educational achievements are not commensurate with the time and expense involved.

____58. Consideration for the process of learning should be basic to the purchase of any piece of A-V equipment.

____59. Most students have the attitude that television, per se, provides entertainment, rather than education.

____60. The <u>percentage</u> of teachers using newer educational media has increased greatly in recent years.

____61. Wider usage of currently accepted A-V aids is needed.

____62. The use of ETV is limited to the larger and financially more able educational units.

____63. The personal relationship between teacher and student is essential in most learning situations.

____64. If surplus funds exist, which could be spent only for supplementary books or for more A-V equipment, the A-V equipment should be chosen.

____65. In the realm of newer educational media, the professional educators are depending too much on idealists, theorists, and self-styled educational psychologists.

____66. The A-V person's curricular usefulness is directly limited to his technical knowledge of audio-visual equipment.

____67. The place of auditory stimulating equipment is being taken by equipment that stimulates both by auditory and visual cues.

____68. Teaching machines utility cannot be evaluated solely on the basis of standardized scholastic achievement of students using them.

____69. A-V materials are so specific as to have little adaptability to different teaching requirements or situations.

____70. These newer educational media tend to subordinate the teacher's relationship with students.

____71. Most of the decisions on utilization of newer educational media are administrative and should remain in the province of administration.

____72. The passivity characteristic of learning by A-V aids is not conducive to the most effective learning.

____73. The development of the automatic threading film projector is a fundamental breakthrough leading to much wider usage of films and projectors.

____74. Commercial films of historical fiction but with historical bases can be effectively used in social studies.

____75. Wider use of newer educational media will ultimately mean that instructional costs can be reduced.

____76. More information and research in the area of newer educational media is necessary.

____77. Broadcast (commercial) television offers an excellent opportunity to eradicate functional adult illiteracy.

____78. Every teacher should be able to perform the mechanical operations regarding use of the movie projector and the filmstrip projector.

## APPENDIX C

### "Controversy in Academicia"

CONTROVERSY IN ACADEMICIA

Name the specific professional position you hold, and its level_____

_____

The following statements represent varying points of view about which there is some controversy in American education today. PLEASE assume no pose, but respond rapidly according to your degree of agreement with the statements listed below. Mark your answers in the blank space before each sentence according to the following code:

1. VERY STRONG DISAGREEMENT
2. MODERATE DISAGREEMENT
3. NEUTRAL--NEITHER AGREE NOR DISAGREE
4. MODERATE AGREEMENT
5. VERY STRONG AGREEMENT

____01. The widespread use of teaching machines will revolutionize the process of instruction as we know it now.

____02. All teachers in training should take a course in the use of A-V aids.

____03. Every school should have a central A-V room where the equipment is permanently installed and available for use there.

____04. Learning through A-V educational media is a passive experience.

____05. The possible uses of A-V equipment are limited only by the imagination of the person directing the usage.

____06. Wider acceptance of currently known A-V aids is needed.

____07. Programs for teaching machines should be developed by A-V specialists.

____08. Proper use of A-V materials can go a long way toward providing for individual differences in the learning needs of children.

____09. Most professional educators have viewed newer educational media in the specific context of machines and operations rather than in the more general point of view of a medium for communication.

____10. There are no educational frontiers in newer educational media--just new gadgets.

____11. Public relations are a primary responsibility of A-V people.

____12. The development of new A-V aids is a waste of time and resources.

____13. Recent technological trends in education demand a changing teacher role.

____14. Only through A-V media can vicarious learning experiences be provided in the classroom.

____15. The teaching of foreign languages in the elementary school lends itself particularly well to the use of A-V aids.

____16. A-V materials and educational media usage should be the province of A-V specialists.

____17. The creative student is apt to be stifled by the extensive use of A-V instructional media.

____18. The vicariousness of learning by A-V aids is not conducive to the most effective learning.

____19. A basic problem of A-V education is to change the attitude of many teachers who look upon A-V aids simply as frills tacked on to their regular teaching.

____20. One of the most satisfactory ways to provide adequate educational opportunities for the increasing mass of students is through wider usage of A-V aids.

____21. Provision for the purchase of A-V equipment should be included in every school's instructional budget.

____22. The educational value of broadcast (commercial) television is practically nil.

____23. The development of A-V centers in every school unit should be encouraged and facilitated.

____24. In one teacher's college, 10 per cent of the instructional budget is given to the A-V department. More colleges should adopt this plan.

____25. Exerting influence for administrative decisions favorable to A-V should be a key activity of A-V personnel.

____26. The use of such aids as the bioscope, electric microscope, and science films can revolutionize the teaching of science.

____27. The expense of most A-V media is out of all proportion to their educational value.

____28. New teachers would be more inclined to use A-V aids if there were wider usage of these aids in teacher-training programs.

____29. Most innovations in newer educational media have been well validated in research studies to substantiate their utility.

____30. Most A-V persons do not use the mass communications media enough in developing a favorable public attitude toward A-V.

____31. The <u>percentage</u> of teachers using newer educational media has increased greatly in recent years.

____32. Wider usage of currently accepted A-V aids is needed.

____33. The personal relationship between teacher and student is essential in most learning situations.

____34. If surplus funds exist, which could be spent only for supplementary books or for more A-V equipment, the A-V equipment should be chosen.

____35. Teaching machines utility cannot be evaluated solely on the basis of standardized scholastic achievement of students using them.

____36. A-V materials are so specific as to have little adaptability to different teaching requirements or situations.

____37. These newer educational media tend to subordinate the teacher's relationship with students.

____38. The passivity characteristic of learning by A-V aids is not conducive to the most effective learning.

____39. Wider use of newer educational media will ultimately mean that instructional costs can be reduced.

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